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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,306	02/15/2002	Kazuto Okamura	NAN-0203	8954

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EXAMINER

LAM, CATHY FONG FONG

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,306

Applicant(s)

OKAMURA ET AL.

Examiner

Cathy Lam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 6-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02-15-2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

In view of the amendment and remarks filed on Jan. 27th 2005, the 112 rejections raised in the previous office action has been withdrawn. The pending claims are unpatentable as following:

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the lines are not clear and each figure should be larger (1)-(5). Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Election/Restrictions

1. This application contains claims 6-9 drawn to an invention nonelected with traverse in Paper filed on Jan 27, 2005. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Objections

2. Claims 15 & 17 are objected to because of the following informalities: "HDD" in the preamble should be presented in its full name. Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. Claims 12-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 12 & 13, the etching rates of polyimide A and polyimide B are 4.0 μm and 1.0 μm or more, respectively. It is not clear these rates have the same unit as in claim 1 (ie. $\mu\text{m}/\text{min}$)? Clarification is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 3, 5 and 14-16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Shimose et al (US 6203918).

It is noted by the examiner that some claims involve processing steps, such as in claim 1, a mean etching rate.....by a 50% aqueous solution of potassium hydroxide at 80°C; and in claim 5. It is the product itself which must be new and unobvious. Unless some unexpected result is shown that occurs due to Applicant's specific process(es), different processing steps are not patentably distinguishing for claims to an article.

Shimose discloses a laminate for use in HDD suspension comprised of a stainless steel base, a plurality of polyimide layers and an electrical conductive (col 1 L 66-col 2 L 2).

The polyimide layers are bonded to both stainless steel base and the electrical conductor wherein the adhesive strength being 0.5 kg/cm or more, respectively (or equivalent to about 0.5 kN/m). The polyimide layer has a linear CTE of $1 \times 10^{-5}/^{\circ}\text{C}$ to $3 \times 10^{-5}/^{\circ}\text{C}$ (col 2 L 5-14).

The polyimide layers comprised of at least two layers having different linear CTEs, with one polyimide layer has a CTE of $2.5 \times 10^{-5}/^{\circ}\text{C}$ or less and one polyimide layer has a CTE of $3 \times 10^{-5}/^{\circ}\text{C}$ or more (col 3 L 32-40). The examiner takes the position that the polyimide layer has a CTE of $2.5 \times 10^{-5}/^{\circ}\text{C}$ or less resembles the presently claimed polyimide A and the polyimide layer has CTE of $3 \times 10^{-5}/^{\circ}\text{C}$ or more resembles the presently claimed polyimide B.

The polyimide layers have an etching rate of 0.5 :m or more by using a 100% hydrated hydrazine (col 3 L 66-67). The polyimide layer B is prepared from diamines and tetracarboxylic acid anhydrides (col 4 L 1-2 & L 60-63). The presently claimed structure is clearly disclosed by Shimose (col 6 L 38-63).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 10-14 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimose et al (US 6203918) in view of Mochizuki et al (US 5578696) and Takabayashi et al (US 5262227).

Shimose teaches a laminate for used in HDD suspension comprised of a plurality of polyimide layers, a stainless steel base and a conductive layer.

Shimose however does not teach the particular polyimide obtained by the diamine as stated in claim 4.

Mochizuki discloses a heat resistant adhesive film which is used in printed circuit boards. The heat resistant adhesive film is comprised of a polyisoimide resin which is coated onto a polyimide film to form a two ply base (col 4 l 25-34).

The polyisoimide resin can be an aliphatic tetracarboxylic acid dianhydride component and a diamine component (col 2 L 65-col 3 L1). The tetracarboxylic acid dianhydride component can be a pyromellitic acid or 3,3',4,4'-benzophenonetetracarboxylic acid (col 3 L 14-20). The diamine component can be 3,4'-diaminodiphenyl ether or 1,3-bis(3-aminophenoxy)benzene (col 3 L 39 & L 53-54).

A copper foil is plated onto one surface and another metal such as stainless steel foil is bonded to the other side of the two ply base, where the copper foil is bonded onto the adhesive (or polyisoimide resin) side (or polyimide B) (col 4 L 36-41).

The two ply base can be wet etched by using potassium hydroxide solution (col 4 L 46-55).

Mochizuki's polyisoimide resin adhesive would turn into a polyimide resin upon heating. The examiner takes the position that Mochizuki's polyisoimide resin adhesive resembles the polyimide resin layer (B) because the polyisoimide resin is made from the same materials as claimed by the applicant.

Takabayashi discloses a metal foil laminate comprised of two layers of polyimide films and a metal foil.

The two layers of films are aromatic polyimide films (A&B). The metal foil is laminated to polyimide film B which is laminated to film A.

The polyimide film A is derived from biphenyltetracarboxylic acid and a 3,4'-diaminodiphenylether, whereas the polyimide film (B) is derived from tetracarboxylic acid and an aromatic diamine (col 3 L 37-42 & col 6 L 1). The polyimide film A can be 4,4'-diaminodiphenylether or m-phenylenediamine or p-phenylenediamine (col 5 L 65-66 & col 8 L 44-49). As on page 9 L 14 & 16 of applicant's disclosure, these polyimides have low CTE and are suitable for used as polyimide A.

The polyimide B can be 3,3',4,4'-benzophenonetetracarboxylic acid (col 6 L 20-26). The polyimide films (both A & B) have a T_g in the range of 260°C-360°C (col 6 L 58-60).

Regarding to the polyimide layers thickness ratios and etching ratio, the examiner takes the position that the thickness ratios are obvious matter of design choice, the prior art (Shimose col 2 L 27 & Takabayahi col 3 L 35-40) have at least lie within the claimed range. The examiner also takes the position that the etching ratio is inherent since the polyimide material layers are met by the prior art.

Both Mochizuki and Takabayashi teach the polyimide materials for the polyimide film A and the polyimide layer B.

In view of the prior art teachings, one skill in the art would use the polyimide resin layers as disclosed by Mochizuki and Takabayashi between the metal foil and the stainless steel base, because these polyimide resin compositions exhibit good adhesiveness (or high peel strength) and has low CTE and a T_g around 300°C (see Takabayashi col 6 L 58-60).

Regarding to the polyimide resin layer A in the present invention. The examiner takes the position that the (supporting) polyimide resin films in the prior art exhibit low CTE values (see Mochizuki col 10 Table 2, and Takabayashi col 10 Table 1). Therefore, the present invention is obvious over the combination of Shimose in view of Mochizuki and Takabayashi's teachings.

Double Patenting

3. Claims 1-5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10/467,463. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are structurally and material identical.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

4. Applicant's arguments filed January 27, 2005 have been fully considered but they are not persuasive. Applicant traverses the art rejection and raises the following issue:

A. applicant numerously raises the issue of "the insulating resin layer having plural layers of polyimides and every constituent layer of the insulating resin layer exhibits a means etching rate of 0.5 $\mu\text{m}/\text{min}$ or more by a 50% aqueous solution of potassium hydroxide at 80°C", and denies that the prior art references do not meet nor are obvious over the present invention.

B. applicant also traverse the obviousness type double patenting rejection.

In respond to the above issues:

A. the cited prior art clearly teaches the polyimide resin materials claimed by the applicant, alone or in combination. The claimed etching rate would be inherent if the same concentration of aqueous KOH under the same condition (ie. 80°C) are utilized.

The examiner takes the position that once the claimed material(s) are met, the properties are inherent, because properties are materially dependent.

B. the pending claims in both 10/467,463 and 10/075,306 are structurally similar and materially the same.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Cathy Lam
Primary Examiner
Art Unit 1775

cfl
April 18, 2005